

Claims

1. An electrostatic holding device in which an electrode group including a plurality of electrodes covered with an insulating material is used as a holding surface, and predetermined voltage is applied to the electrode group to hold a holding object by an electrostatic force with a contact state or with a floating non-contact state, comprising:

an internal polarization eliminating device configured to eliminate an internal polarization generating in the insulating material by switching a polarity of the voltage to be applied to the electrode group.

2. An electrostatic holding device in which an electrode group including a plurality of electrodes covered with an insulating material is used as a holding surface, and predetermined voltage is applied to the electrode group to hold a holding object by an electrostatic force with a contact state or with a floating non-contact state, comprising:

an applied voltage control portion functioning as an applied voltage switching device configured to apply the voltage whose polarity is opposite to previously applied voltage to the same electrode group whenever switching the applied voltage to the electrode group from disconnecting to applying.

3. An electrostatic holding device in which an electrode group including a plurality of electrodes covered with an insulating material is used as a holding surface, and predetermined voltage is applied to the electrode group to hold a holding object by an electrostatic force with a

contact state or with a floating non-contact state, comprising:

an applied voltage control portion functioning as a voltage of reversed polarity generating device configured to generate the voltage whose polarity is opposite to the voltage to be applied to the electrode group at the time of handling, and configured to be capable of applying the voltage of the reversed polarity generated by the voltage of reversed polarity generating device to the electrode group when the electrostatic force deteriorates.

4. An electrostatic holding device in which an electrode group including a plurality of electrodes covered with an insulating material is used as a holding surface, and predetermined voltage is applied to the electrode group to hold a holding object by an electrostatic force with a contact state or with a floating non-contact state, comprising:

an applied voltage control portion functioning as a voltage applying device configured to apply an applied voltage to the electrode group by alternately changing to a reversed polarity.

5. Electrostatic tweezers, comprising: the electrostatic holding device according to any one of claims 1 to 4, wherein

the holding surface is adopted as an attracting portion of the tweezers.

6. An electrostatic holding device including a control portion for controlling voltage to be applied to an electrode to hold a holding object by an electrostatic force with a contact state or with a floating non-contact state, wherein

the electrode includes a pair or two or more pairs of an electrode A and an electrode B adjacently disposed through an insulating area, and

the control portion applies the voltage whose polarities are
5 opposite to each other to the electrode A and the electrode B, and alternately applies the voltage of the reversed polarity of positive and negative to the same electrode element.

7. The electrostatic holding device according to claim 1, wherein the
10 holding object is directly held to the electrode or is held to the electrode through another member with a contact state.

8. The electrostatic holding device according to claim 1, further comprising a distance detecting device configured to detect a distance
15 between the electrode and the holding object, wherein

the control device controls the holding object based on distance information detected by the distance detecting device to be floated and held to the electrode by being separated with a predetermined distance.

20 9. A transportation device or a stage comprising the electrostatic holding device according to claims 1, 2, 3, 4, or 6.